

## **Navajo Code**

One issue with the American's encryption techniques during WWII was that they were slow. (We believe they were reasonably secure.) In fact, in the battlefield, when things were going too fast, to speed up transmission of urgent messages, regular English with some slang was used. (Naturally, too many Japanese had some education in the west and these messages were generally deciphered.) Thus, what was needed was a faster encryption method for certain battlefield situations that still had some security.

Philip Johnston, a retired military man, had grown up on a Navajo reservation and was one of the few men outside of the tribe fluent in the language. He knew how different it was than standard Western or Eastern languages and argued to Lieutenant Colonel James E Jones that the language could be used as a cipher for the battlefield. Ultimately, the US military decided to give the general idea (picking a Native American language as the basis for an encryption system) a shot. The criteria they used were as follows:

- 1) Needed a lack of evidence showing that Japanese had been exposed to the language.
- 2) Needed the tribe to have enough young men that could be used as translators. (Thus, they also needed to know English along with their native tongue and be fit enough to go to the battlefield.)

Based on these two criteria, the Navajo language was the choice the US military made. The Navajo tribe was large, and of all the choices that passed this criteria, it was the only one for which there was no evidence that some Japanese had learned it.

One issue with using a Native American language for military communications is that none of the Native American languages had words that translated to specific military terms. Thus, a lexicon of 274 code words was created (substitute Navajo word with a different original meaning to refer to specific military terms) that the Navajo Code Talkers would have to memorize in their training. Since Navajo isn't written, most of the Navajo had excellent memories and had no trouble memorizing these code words.

Initially, due to poor communication and many units not knowing that the Navajo were being used, their radio calls caused confusion (many thought that Japanese had infiltrated their radio system). But, the system was brought back after a race was done between Navajo code talkers and the typical machine encryption system. The former was simply much faster than the latter.

Once the code was being used in the battlefield, it was seen that the 274 code words weren't enough. Other words without translations would appear, which would then get spelled out. (So, the Navajo word for elk would be said to represent the letter 'e', and so forth.) The problem here, of course is that frequency analysis could be used if it was determined that the frequently cited words were standing for letters. To adjust for this, multiple code words were assigned to the more frequent letters (an idea we previously mentioned as an adjustment to make substitution more difficult to break).

One notable success in the middle of the war was the Allied forces taking the key port of Rabaul from the Japanese. It was a key port of Papua New Guinea, which the Japanese had taken control of and used as a base for many activities in 1942. Most navy flight missions aimed at taking back

control ended up in failure because the Japanese were reading the US Navy communications. On November 5, 1943, the Navy decided to enlist 11 Navajo Code Talkers (who usually did communications for the Marines), and were able to take back Rabaul from the Japanese within six days.

The greatest success of the Navajo Code Talkers was during the battle of Iwo Jima, which took place from February 19 - March 16, 1945, towards the end of WWII. Iwo Jima (also nicknames Sulfer Island) is a relatively small island in a very strategic position between Japan and other islands. Japan had defended Iwo Jima during most of the war and used it as a base to notify the mainland of US bombing attacks. In addition, Japanese jets took off from Iwo Jima to shoot down US planes after they had completed their bombing missions. If the US could take Iwo Jima, they would have this small intermediate piece of land to use as a temporary landing space for planes and the Japanese would not be able to warn the mainland of attacks as easily. The fighting on Iwo Jima was rough. It's a small island which quickly slopes upwards with many volcano line caverns to hide in. Though the US bombed the island for 74 days straight, when the US finally decided to invade the beach on February 19<sup>th</sup>, the Japanese defenses were quite strong. General Tadamichi Kuribayashi decided to let the Americans get on the beach initially and hide in foxholes, instead of attacking right away. Once many Americans were on the beach, the Japanese started shooting when the Americans had few places to go and hide. All of the communications between multiple groups on the ground and the ships in the water were handled by the Navajo. Over the course of the first 48 hours of the attack, the Navajo sent over 800 messages without error. These messages were relayed from the ground to the ships telling the US planes where Japanese were hiding. Similarly, US planes, upon seeing critical issues from the sky radioed that information back down to the ground to save lives. A couple key stories include the description by Navajo on the ground of a platoon to be rescued, and every single person in the platoon was saved due to the pinpoint accuracy of the description of the location of the platoon. Another code talker continued to translate messages even after his foot was blown off, until he passed out from shock. Ultimately, the US took Iwo Jima after a month of heavy fighting (probably about 6,800 American lives lost and 20,000 Japanese lives lost), and having that base saved US lives in the last months of the war. Major Howard Conner from the Fifth Marine Division said, "Were it not for the Navajo code talkers, the Marines would have never taken Iwo Jima."

## **Sources**

This write-up is simply a summary of the information provided in the two following sources:

The Code Book by Simon Singh (ISBN: 0-385-49532-3) ppg 191-201

Navajo Code Talkers by Nathan Aaseng (ISBN: 978-0-8027-7627-3) ppg 49-51, 88 - 99